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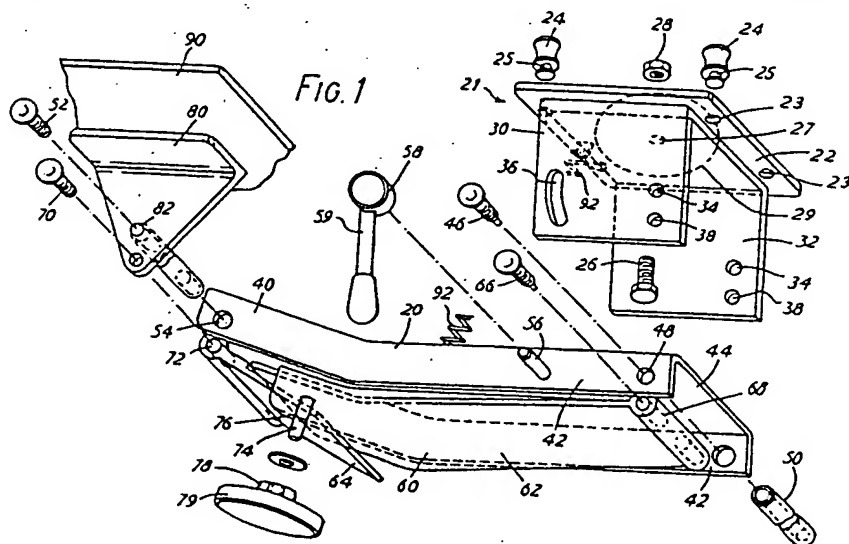
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## (54) Adjustable support mechanism for a keyboard or the like

(57) An adjustable support mechanism for a keyboard or the like comprises a platform 90 on which the keyboard can be mounted and a supporting frame 10 adapted to be connected to the underside of a table or desk. The platform 90 is connected to the frame 10 by upper and lower arms 40 and 60 forming a parallel linkage so that the platform can be raised and lowered without changing its orientation. The arm 40 can be clamped to the body by a clamping screw operated by a handle 59 to fix the platform in position after its height has been adjusted. The length of the lower arm 60 can be adjusted to enable the platform 90 to be levelled. The frame 10 consists of two parallel rails 12, and the arms 40 and 60 are mounted on a carriage 21 movable along the rails so that the platform 90 can be moved horizontally towards and away from the table or desk. The arms are also pivotable about a vertical axis.



The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.  
The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.

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## SPECIFICATION

Adjustable support mechanism for a keyboard or the like

- 5 This invention relates to adjustable support mechanisms for keyboards, or the like.

Apparatus such as word processors and computers are often provided with separate keyboards connected to the body of the apparatus

- 10 by a flexible cable, so that the position of the keyboard on the desk or table can be adjusted. However, if the keyboard rests on a desk or table, its height cannot readily be adjusted to suit the operator.

- 15 It is an object of this invention to provide a support mechanism for a keyboard to the like which enables the height of the keyboard or the like to be readily adjusted.

- This invention consists in an adjustable support mechanism for a keyboard or the like, comprising a platform on which the keyboard or the like can be mounted and which is supported by an arm connected to a body adapted to be fixed to a table or desk, in which the arm is pivoted to the body for movement about a horizontal axis to enable the platform to be moved up and down, and in which means are provided for maintaining substantially constant the angular orientation of the platform as it is moved up and down.

- 20 Preferably, the arm comprises at least one pair of upper and lower arm members pivoted to the body of the mechanism about respective axes spaced vertically from one another and pivoted to the platform about correspondingly vertically spaced pivotal axes.

- 30 Suitably, locking means are provided to lock the arm in any desired position. The locking means may comprise a manually-operated clamp for clamping the arm to the body.

- 40 Preferably, the mechanism includes means for moving the platform horizontally towards and away from the body fixed to the desk or table. In one form of the invention, the body includes one or more rails extending in the direction of horizontal movement of the platform, and the arm is mounted on a carriage movable along the rails.

- In one embodiment of the invention, the arm may be connected to the body so as to be pivotable also about a vertical axis. This enables the position of the keyboard relative to the desk or table to be adjusted in three dimensions.

- 50 The body of the mechanism is preferably adapted to be fixed beneath the top of a table or desk, so that it is unobtrusive in use.

- 55 One embodiment of the invention will now be described with reference to the accompanying drawings, in which:

- Figure 1 is an exploded view of a mechanism in accordance with the invention,

- 60 Figure 2 is a perspective view from below of the mechanism.

- Referring to the drawings, an adjustable support mechanism for a keyboard or the like comprises a supporting frame 10 adapted to be fixed to a desk or table, and an adjustable arm assembly 20 mounted

on the supporting frame and having at its outer end a platform 90 for supporting a keyboard or the like.

- 70 The supporting frame 10 comprises two parallel rails 12 in the form of steel rods, fixed at opposite ends to blocks 14. The blocks 14 are adapted to be fixed, for example by means of screws, to the underside of a table or desk so that one of the blocks is near the edge of the table or desk and the rails 12 extend horizontally at right angles to the edge of the desk.

- 75 The arm assembly 20 includes a carriage 21 which is suspended from the rails 12. The carriage has a rectangular plate 22 at each of the corners of which is mounted a roller 24 freely rotatable on a pin 25 fixed to the plate. Each roller is bobbin-shaped to run against one of the rails 12 and the rollers are positioned so that one pair of the rollers engages each of the rails, with the plate suspended horizontally beneath the rails and movable along the rails.

- 80 A bracket 30 is connected to plate 22 by means of a pivot pin 26 which extends upwards through a hole 27 in a horizontal upper part of the bracket and a hole in the plate 22 and is secured by a nut 28, the connection allowing the bracket 30 to pivot about a vertical axis. A plastics disc 29 interposed between the plate 22 and bracket 30 to act as a bearing.

- Pivotally connected to the bracket 30 are two arms 40 and 60. The upper arm 40 consists of two vertical flanges 42 joined by a web 44, the rear part of the arm fitting between two depending side pieces 32 of the bracket 30. The arm 40 is connected to the bracket 30 by pins 46 which extend through aligned holes 34 and 48 on the side pieces 32 of the bracket and the flanges 42 of the arm 40, and engage a locking member 50 between the flanges 42, so that the arm can pivot about a horizontal axis at right angles to the direction of travel of the carriage 21 on the rails 12. The upper arm 40 is connected at its other end to brackets 80 connected to platform 90, on which the keyboard is supported. The brackets 80 are carried on pivot pins 52 passing through aligned holes 82 and 54 in the bracket 80 and arm 40, so as to pivot about a horizontal axis.

- 110 The lower arm 60 consists of two sections 62 and 64. The rear section 62 is attached to the bracket 30 by means of pivot pins 66 passing through holes 38 in the side pieces 32 and engaging in box 68 in the end of the arm 60, so that the lower arm 60 pivots about a horizontal axis parallel to but spaced vertically from the pivotal axis of the upper arm 40. The front section 64 of the lower arm 60 is pivotally connected to the brackets 80 by means of pins 70 passing through holes 84 in the brackets 80 and engaging bores 72 in the section 64, so that the brackets 80 pivot on the section 64 about a horizontal axis spaced from the axis of connection of brackets 80 to the upper arm 40. The vertical spacing between the holes 82 and 84 in brackets 80 is equal to that between the holes 34 and 38 in the bracket 30, so that the upper arm 40 and lower arm 60 together form a parallel linkage which enables the brackets 80, and the platform 90, to be moved up and down whilst the orientation of the platform is kept constant.

The two sections 62 and 64 of the lower arm 60 are joined together by a bolt 74 which is welded to the underside of section 62 near its forwardmost end and which passes through a slot 76 in the section 64. A nut 78 fixed to a knob 79 engages the bolt 74. The slot 76 allows some relative movement between the sections 62 and 64 to adjust the effective length of the lower arm 60 and thereby adjust the orientation of the brackets 80 and platform 90 relative to the arms 40 and 60. This enables the platform 90 to be levelled or set at a desired angle, after which knob 79 can be turned to tighten nut 78 and hold the sections 62 and 64 rigidly together, so that the orientation of the platform 90 is fixed.

To enable the arms 40 and 60 to be clamped in position, after the keyboard has been set to the desired height, a threaded pin 56, fixed to one of the side flanges 42 of the upper arm 40, projects through an arcuate slot 36 in the adjacent side piece 32 of the bracket 30 and is engaged by a clamping nut 58. A handle 59 fixed to the nut 58 enables the nut to be tightened to clamp the arm 40 to the bracket 30. The engagement of pin 56 in the slot 38 also acts to provide upper and lower limits to movement of the arm assembly. To counterbalance the weight of the arm assembly 20 and the keyboard, a tension spring 92 is connected between the bracket 30 and the upper arm 40.

In use, the supporting frame 10 is connected to the underside of a table or desk as described above, and the keyboard is mounted on the platform 90. The movement of the carriage 21 along the rails 12, and the movement of the bracket 30 and arm assembly 20 about the pivotal connection of the bracket 30 to the plate 22, allows the position of the keyboard relative to the table to be adjusted to suit the operator. By means of the knob 79, the keyboard can be levelled, or set at a suitable angle. The arm assembly 20 then allows the height of the keyboard to be readily adjusted, without changing the angle at which the keyboard has been set.

If the described mechanism is to be used in an application in which the facility of moving the keyboard platform horizontally is not required, the arm assembly 20 can be dismantled from the rails 12 and fixed directly to the desk or table. In this case, the rollers 24 and pins 25 are removed from the mounting plate 22, and the plate is fixed to the underside of the desk or table, for example by means of screws passing through the holes 23 which received the pins 25.

#### CLAIMS

1. An adjustable support mechanism for a keyboard or the like, comprising a platform on which the keyboard or the like can be mounted and which is supported by an arm connected to a body adapted to be fixed to a table or desk, in which the arm is pivoted to the body for movement about a horizontal axis to enable the platform to be moved up and down, and in which means are provided for maintaining substantially constant the angular orientation of the platform as it is moved up and down.

2. A support mechanism as claimed in Claim 1, in which the arm comprises at least one pair of upper and lower arm members pivoted to the body of the mechanism about respective axes spaced vertically from one another and pivoted to the platform about correspondingly vertically spaced pivotal axes.

3. A support mechanism as claimed in Claim 2, in which the length of one of the members is adjustable to enable the orientation of the platform to be adjusted.

4. A support mechanism as claimed in any preceding claim, in which locking means are provided to lock the arm in any desired position.

5. A support mechanism as claimed in Claim 4, in which the locking means comprises a manually-operated clamp for clamping the arm to the body.

6. A support mechanism as claimed in any preceding claim, and including means for moving the platform horizontally towards and away from the body fixed to the desk or table.

7. A support mechanism as claimed in Claim 6, in which the body includes one or more rails extending in the direction of horizontal movement of the platform, and the arm is mounted on a carriage movable along the rails.

8. A support mechanism as claimed in any preceding claim, in which the arm is connected to the body so as to be pivotable also about a vertical axis.

9. A support mechanism as claimed in any preceding claim, in which the body of the mechanism is adapted to be fixed beneath the top of a table or desk.

10. An adjustable support mechanism for a keyboard or the like, constructed, arranged and adapted to operate substantially as described with reference to, and as shown in, the accompanying drawings.

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